

CB 09-04

April 14, 2009

# WHAT IF BOEING LEFT WASHINGTON?

## THE BOTTOM LINE

Boeing has a “jobs multiplier” of 3.96: Each of the company’s jobs supports nearly three additional jobs in the state. The permanent loss of 72,000 Boeing jobs would reduce the total number of jobs in the state by 285,000.

Imagine Washington without The Boeing Company.

That’s a plausible scenario in today’s turbulent economic times. Last fall, Boeing Commercial Airplanes CEO Scott Carson hinted as much in his candid keynote address to business leaders at the Prosperity Partnership’s annual luncheon in Seattle. In his remarks to the public-private partnership for economic development, Carson described the intense pressures the aerospace giant faces in a globally competitive market.

“Location is a choice,” said Carson.

Where a business chooses to locate makes a strategic difference in its ability to compete effectively. Public policies — taxes, education and workforce training, regulation, transportation corridors — play a critical role.

Many observers interpreted Carson’s comment as a not-so-subtle reminder to public officials not to take the company’s presence for granted. Most state residents recognize the value of a global manufacturing company: the direct jobs, the charitable contributions, the cluster of suppliers, and multiplier effect as good wages flow through the community.

What would it mean to us if Boeing, the state’s largest private employer, were to disappear from the economy? The Washington Research Council has quantified this for us in this Competitiveness Brief. The results are dramatic. For example:

- ◆ Since each Boeing job supports nearly three additional jobs in the state, the company’s departure would mean a permanent reduction of 285,000 jobs.
- ◆ Without the draw of aerospace employment, housing prices would fall by as much as 6.5 percent by 2030.
- ◆ Statewide personal income would decline by nearly 9 percent.

The following analysis goes into greater detail, outlining two withdrawal scenarios. The impact would be severe, underscoring the company’s importance to the state. That, however, is not the sole reason for this report. Carson’s expressed concern for the state business climate – telling it as it is with respect to Boeing – is echoed by thousands of other Washington employers, large and small, from virtually every sector in the economy.

Carson closed his speech by outlining four steps that lawmakers could take this year to improve the business climate:

1. Develop a sustainable budget that preserves essential public services without raising taxes.

The Washington Alliance for a Competitive Economy is a coalition of business organizations working together to build economic opportunity for all Washingtonians.

For more information, please visit [www.washace.com](http://www.washace.com)

2. Target higher education investments to programs that contribute directly to economic growth and recommit to education accountability.
3. Emphasize timely completion of authorized transportation projects for which funding has been committed.
4. Reform the state unemployment and workers' compensation programs to prevent uncompetitive increases in employer costs.

Those are not simply Boeing issues, although they matter a great deal to the aerospace giant. And, as the following report underscores, Boeing matters a great deal to Washington.

## BOEING

The Boeing Company is the state's largest private employer. The 75,496 people working at the company in Washington at the end of March 2009, accounted for 2.7 percent of the state's nonfarm employment. (Contract workers typically represent 2–4 percent of reported Boeing jobs.) From September 2001 to June 2004, the company shed 27,000 jobs (from 80,000 to 52,800) in response to the collapse in demand for commercial airliners following the 9/11 terrorist attacks. As a result, the 2001 recession was longer and deeper in the central Puget Sound region than in most other parts of the country.

### THE WRC-REMI MODEL

The simulations reported in this brief were conducted for WashACE by the Washington Research Council (WRC) using the WRC-REMI model of the Washington State economy. Because it allows supply and demand to respond to changes in prices and wages, and permits substitution among factors of production, the WRC-REMI model is more elaborate than the standard input-output models commonly employed to estimate regional economic impacts.

The WRC-REMI model divides the state into two regions, the *Central Puget Sound region*, which includes the four Puget Sound Regional Council counties (King, Kitsap, Pierce and Snohomish), and the *rest of Washington*. There are 66 private and four public industrial sectors within each region. Within each region the model tracks inter-industry transactions, much as an input-output model would.

In this brief, we examine the anticipated impact on the Washington economy of a complete withdrawal of Boeing from the state. We have simulated two scenarios: an *immediate withdrawal*, whereby the company leaves the state completely in one year, 2013, and a *phased withdrawal*, whereby the company reduces employment in equal increments over 10 years. Though unlikely, the first scenario is instructive since the dynamics of the economy's reaction to the loss of jobs plays out in complex ways that are easier to see in a simulation where all jobs leave at once.

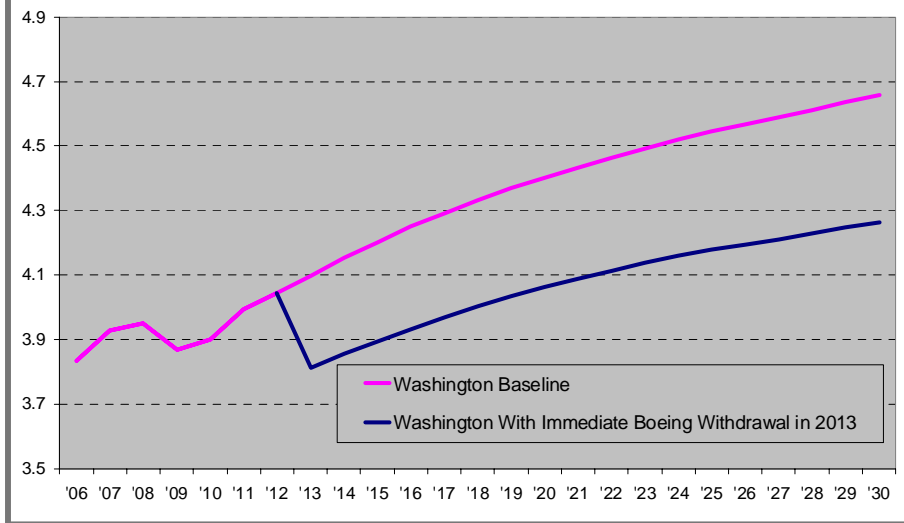
Our modeling indicates that Boeing has a "jobs multiplier" of 3.96. Essentially, every Boeing job in Washington leads to nearly three additional jobs in the state. Consequently, the permanent loss of 72,000 Boeing jobs would reduce the total number of jobs in the state by 285,000.

### THE BASELINE SCENARIO

Our baseline scenario has been calibrated to the February 2009 preliminary forecast for the Washington state economy, produced by the staff of the Economic and Revenue Forecast Council, which extends through the year 2011.

Under the baseline scenario, employment in Washington state grows 15 percent between 2012 and 2030. The rate of growth declines over time; averaging 1.1 percent annually from 2012 to 2020 and 0.6 percent from 2020 to 2030. Population grows by 22 percent from 2012 to 2030, with the annual rate averaging 1.3 percent from 2012 to 2020 and 0.9 percent

Chart 1: Washington Employment (jobs in millions)



from 2020 to 2030. Annual real per capita personal income growth averages 1.1 percent, with little year-to-year fluctuation.

The baseline assumes that direct Boeing employment returns to 72,000 by the year 2013 and holds constant at that level thereafter.

**IMMEDIATE WITHDRAWAL SCENARIO**

Chart 1 shows state employment for the immediate withdrawal scenario compared to the baseline. Baseline employment grows 51,100 from 2012 to 2013. In contrast to the baseline scenario, under the immediate withdrawal scenario, total employment statewide

drops by 233,900. This creates an overall employment gap of 285,000 jobs between the two scenarios. This equates to roughly three times the number of jobs projected to be lost in the current recession. Under this scenario, employment does not surpass the 2012 level until 2020.

Dividing the change in total employment by the change in Boeing employment gives a “multiplier” of 3.96, which is close to the multiplier of 3.8 calculated by Glenn Pascall, Douglas Pedersen and Richard Conway 20 years ago in their study of the impact of Boeing on the Washington state economy.

The gap in jobs widens over time. In 2022, the gap between the baseline and immediate withdrawal scenarios is 350,300 jobs (implying a multiplier of 4.87); for 2030 the gap is 396,200 jobs (a multiplier of 5.50). In part, the growing multiplier reflects lags in the impact of the loss of Boeing jobs on population and investment. It also reflects the loss of labor pool and technological spillovers from Boeing that enhance productivity of other firms.

With the loss of that many jobs, the 2013 statewide unemployment rate is

6.4 percent higher than it otherwise would have been. (The margins are 9.5 percent in the central Puget Sound region and 2.5 percent in the rest of the state.) The rise in unemployment would be greater, except that declining net migration to the state and a lower labor force participation rate reduce the 2013 labor force by 63,700 compared to the baseline.

Migration responds to economic opportunity. When fewer jobs are available, the number of people moving in drops and the number moving out rises.

Chart 2 compares net migration

Chart 2: Net Migration to Washington (thousands of people)

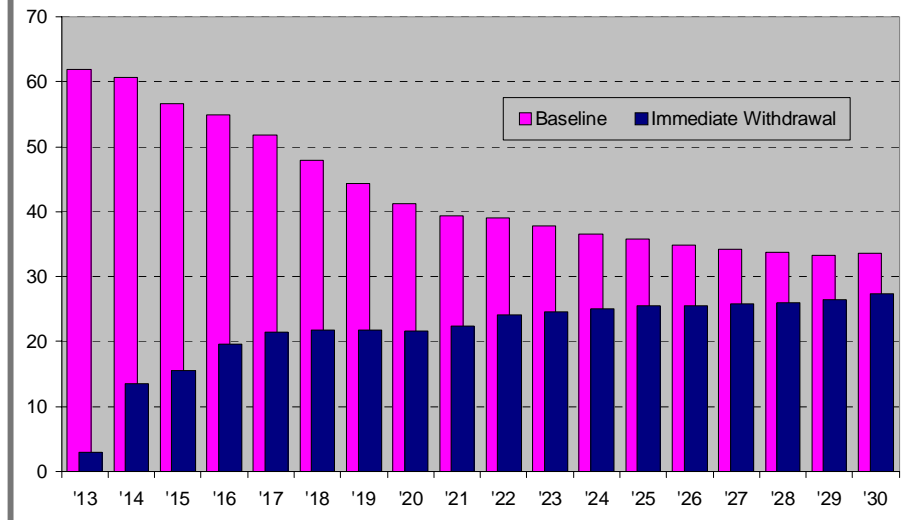
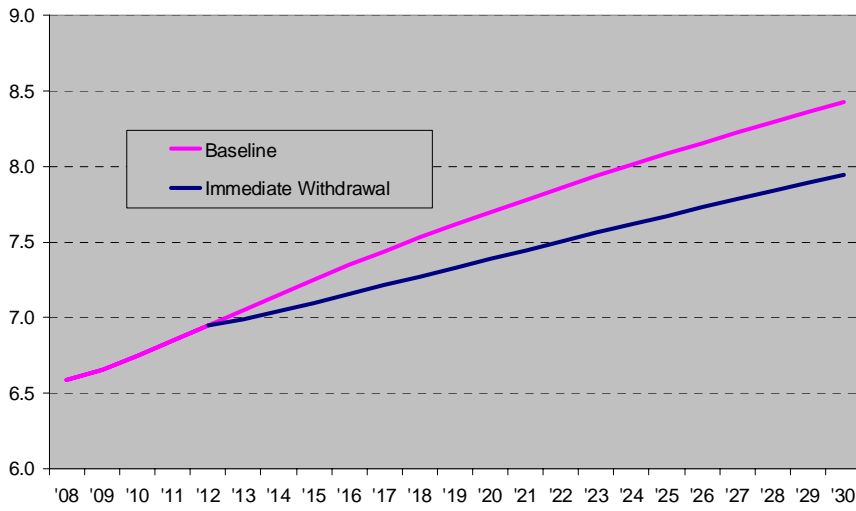


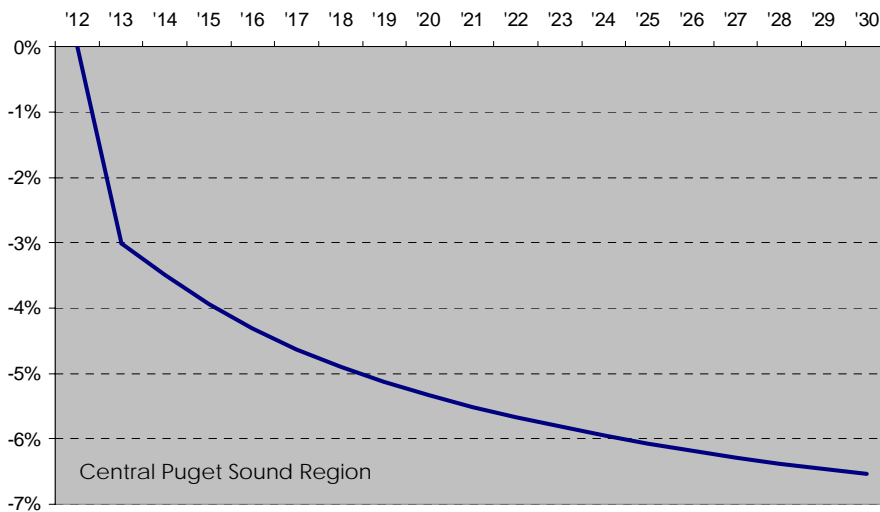
Chart 3: Washington Population (millions of people)



into the state for the baseline and immediate withdrawal scenarios. Under the baseline, 2013 net migration is 61,900. In subsequent years, the baseline shows a downward trend in net immigration, which reflects both declining national population growth and declining growth in Washington’s share of national population.

Under the immediate withdrawal scenario, net migration is 2,900 in 2013. (Net migration for the central Puget Sound region is -16,000; net migration for the rest of the state is + 18,900.) While it rises every year thereafter, net migration remains below the baseline through 2030.

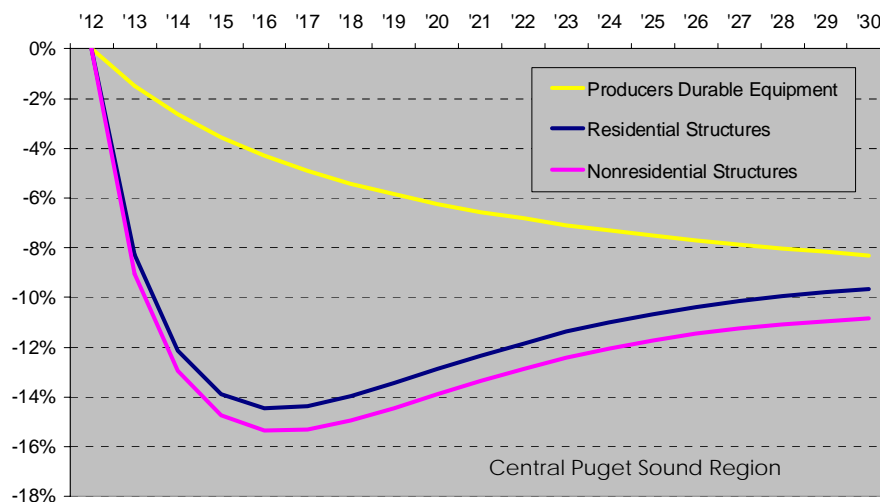
Chart 4: House Prices (vs. baseline)



By 2030, the state’s population is 482,000 less than the baseline. (See Chart 3.) Of this reduction in population growth, 400,000 is in the Central Puget Sound region. As noted above, the lower rate of population growth is one reason that the implicit multiplier associated with the loss of the Boeing jobs grows over time.

Lower population growth reduces the demand for housing, which in turn reduces home prices. Chart 4 shows the percentage point difference in Central Puget Sound region home prices between the immediate withdrawal and baseline scenarios. The difference starts at three percent in 2013 and widens to 6.5 percent by 2030. For the rest of the state, the average reduction in home prices is smaller, 0.4 percent in 2013 and 1.5 percent in 2030.

Chart 5: Investment (vs. baseline)



With lower rates of population growth, the state needs less housing. Thus, one impact of the loss of Boeing jobs is a reduction in residential investment. The full impact is felt with a multi-year lag.

Chart 5 shows the percentage difference for investment in residential structures between the immediate withdrawal and baseline sce-

narios. The impact from the loss of 72,000 Boeing jobs builds over four years. For 2013, the first year the jobs are gone, residential investment is 8.3 percent lower than the baseline. The gap expands to 14.5 percent by 2016, from which point it gradually contracts, reaching 9.6 percent in

2030.

With the loss of jobs and population, demand for nonresidential structures falls also. The impact on investment in non-residential structures is similar to that in residential structures, building over four years and then gradually declining, as shown on Chart 5. Chart 5 also shows the percentage difference for investment in producer durable equipment between the immediate withdrawal scenario and the baseline. In this case the percentage difference builds steadily over time.

The pattern of differences in investment in residential and non-residential structures is mirrored in construction employment. For 2013 construction employment is 13,600 lower than the baseline (12,400 lower for the central Puget Sound region and 1,200 lower for the rest of the state). By 2017 the loss has deepened to 23,500 (21,000 for the central Puget Sound region, 2,500 for the rest of the state).

With elimination of the Boeing jobs, real per capita personal income in 2013 is 7.3 percent less than the baseline (see Chart 7) Outside of the Central Puget Sound region, the negative impact on real per capita personal income is much smaller.

Chart 6: Construction Jobs (vs. baseline)

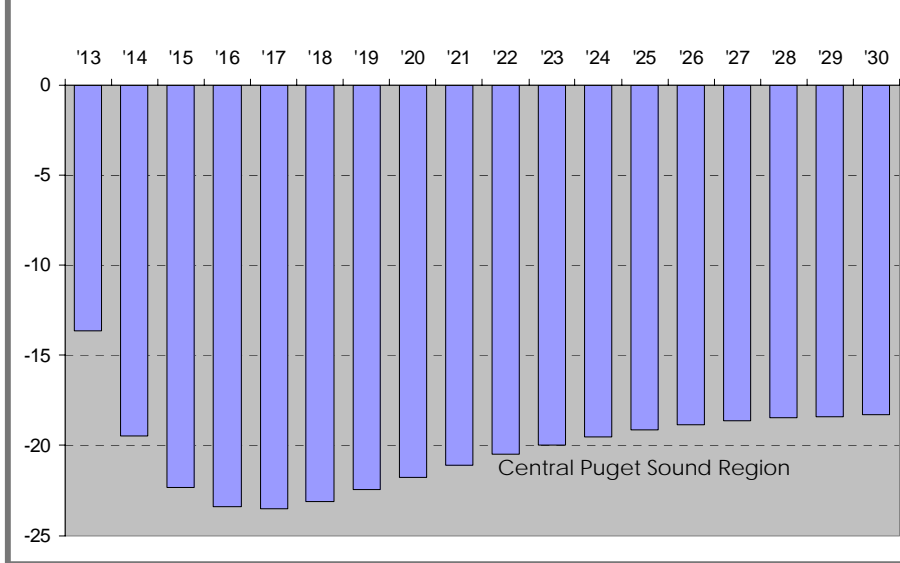
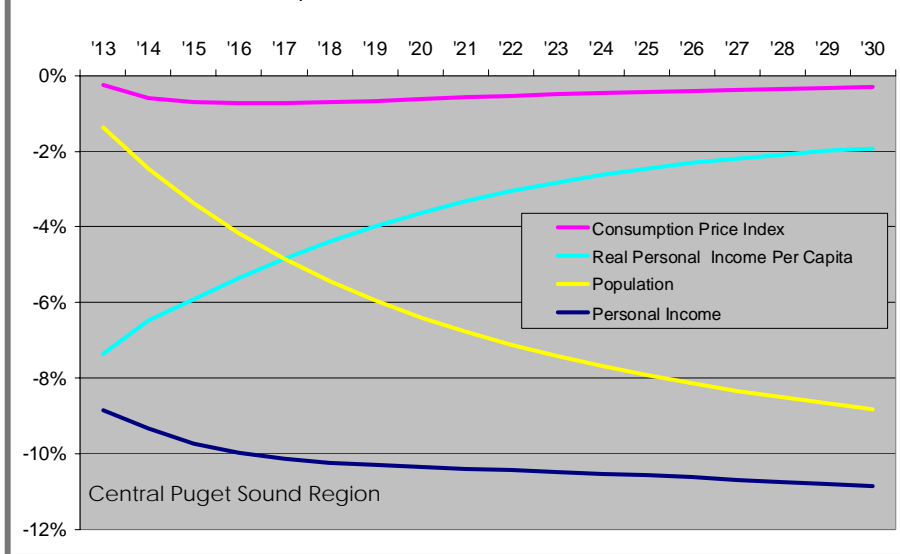


Chart 7: Real Per Capita Personal Income (vs. baseline)



Boeing wages are well above the statewide average. Administrative records from the state unemployment insurance system indicate that the average wage in aircraft manufacturing was nearly \$92,000 in 2007. The annual average wage in jobs other than aircraft manufacturing was less than

\$44,000, while the average annual wage in manufacturing jobs, excluding aircraft manufacturing, was less than \$49,500. (See Table 1.) When the state economy loses 72,000 Boeing jobs in 2013, personal income per capita falls both because the fraction of state residents with jobs falls and because the average wage for those with jobs falls. The first of these effects attenuates over time as slower population growth reduces unemployment. But the second does not, and this explains why

Table 1: 2007 Average Annual Wages

All Employers	\$45,016
Manufacturing	\$59,568
Aircraft Manufacturing	\$91,886
Manufacturing Excluding Aircraft	\$49,486
All Employers Excluding Aircraft	\$43,888

Chart 8: Average Annual Compensation (vs. baseline)

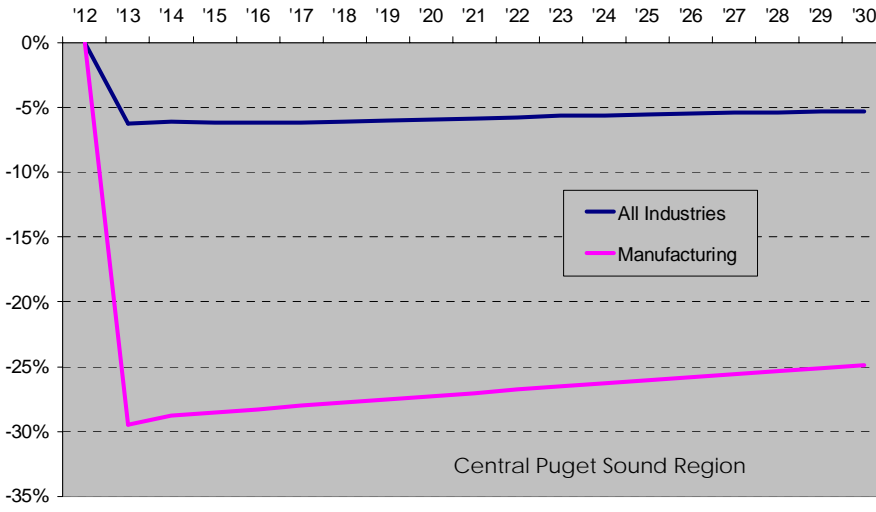


Chart 9: Washington Employment (jobs in millions)

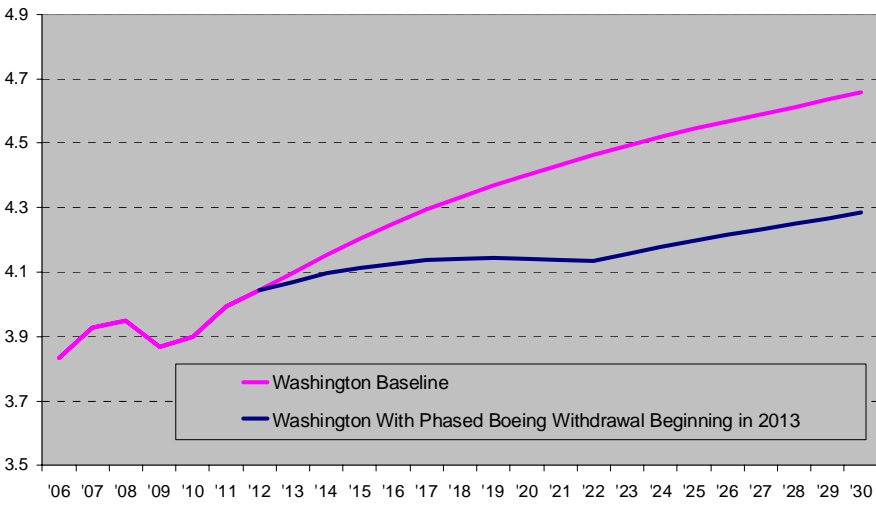
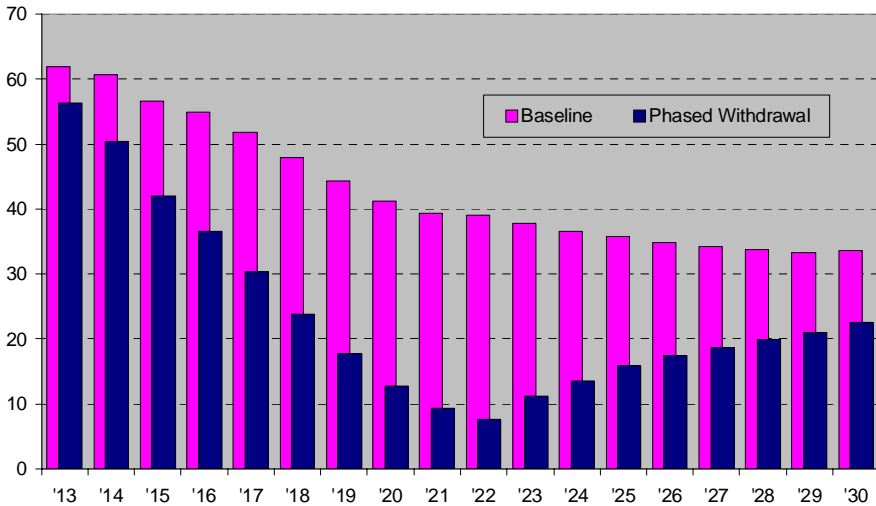


Chart 10: Net Migration to Washington (thousands of people)



real per capita personal income remains two percent below the baseline in 2030, 18 years after the Boeing jobs are lost.

Chart 8 shows the average annual real compensation difference from the baseline for manufacturing and overall in the Central Puget Sound region. (Compensation includes wages and benefits.) For 2013, the average real compensation in manufacturing is 30 percent less than the baseline. The overall average annual compensation is 6.7 percent less than the baseline, but this largely reflects the inclusion of manufacturing in the average: for the average Central Puget Sound region industry other than manufacturing, the fall in average annual real compensation is only 0.4 percent. For 2030, average annual real compensation is 24.9 percent less than the baseline for manufacturing, while it is 5.3 percent less than the baseline overall. For industries other than manufacturing the fall in real compensation is only 0.1 percent.

**PHASED WITHDRAWAL SCENARIO**

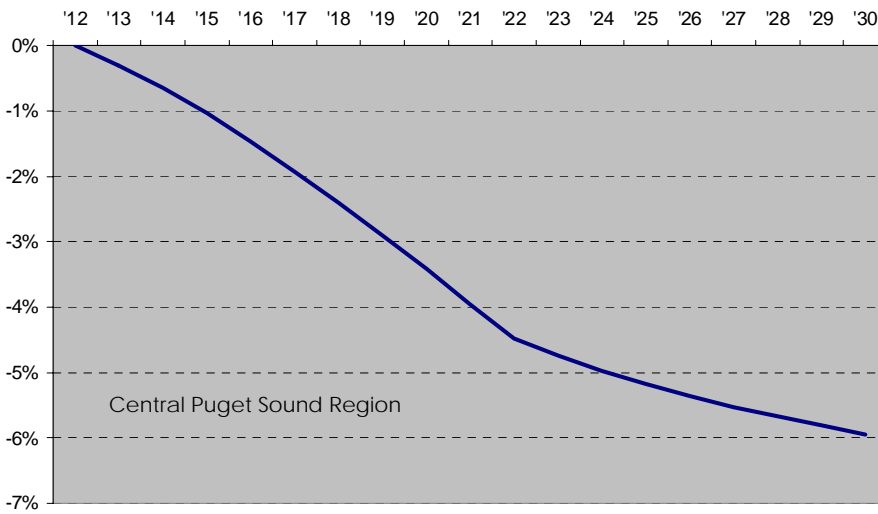
Under the phased withdrawal scenario, Boeing reduces employment in annual increments, beginning in 2013 and is fully gone from the state by 2022. Chart 9 shows the path of employment under this scenario compared to the baseline. In contrast to immediate withdrawal, which keyed a deep recession, phased withdrawal of the company results in a decade of stagnation.

In 2013, the first year of the phased withdrawal, the state adds 22,700 jobs rather than the 51,100 added under the baseline scenario (a net loss of 28,400 over the baseline). The implied jobs multiplier is 3.94, which is almost exactly the value calculated in 2013 under the immediate withdrawal scenario. By 2022, the year the withdrawal is complete, the employment shortfall is 329,500. By 2030 it is 375,400.

The impact of the loss of Boeing jobs on the unemployment rate



Chart 11: House Prices (vs. baseline)



builds over time; the 0.6 percent added to the baseline unemployment rate in 2013 rises to 6.8 percent by 2022. Migration responds to the rising unemployment rate. In 2013, net migration to the state decreases only a bit, from 61,900 to 56,300. The impact is greatest in 2022, when migration falls from 39,000 to 7,600. In that year, net migration to the central Puget Sound region is -4,500; net migration to the rest of the state is +12,100.

Net migration remains well below the baseline through 2030, the end of the simulation period.

By 2030 the state's population under the phased withdrawal is 416,900 less than the baseline. (Of this decrement, 348,300 comes from the central Puget Sound region and 68,600 from the rest of the state.) Population for 2030 is 65,100 greater under the phased withdrawal scenario than under the immediate withdrawal scenario. However, 2030 net migration into the state is greater under the immediate withdrawal than under the phased withdrawal, which indicates that the gap is closing.

Lower net migration to the state and lower population growth again reduce demand for housing and result in lower home prices compared to the baseline. With the phased withdrawal, however, the effect builds more slowly. By 2022, prices in the Central Puget Sound region are 4.5 percent below the baseline; by 2030, 5.9 percent below. (See Chart 11.) The effect on home prices is smaller outside of the Central Puget Sound region.

The impact on investment builds more slowly under the phased withdrawal than the immediate withdrawal scenario. The greatest reduction in investment in residential and non-residential structures occurs in 2023 rather than 2016.

Correspondingly, the impact on construction employment is delayed. In

Chart 12: Investment in Central Puget Sound (vs. baseline)

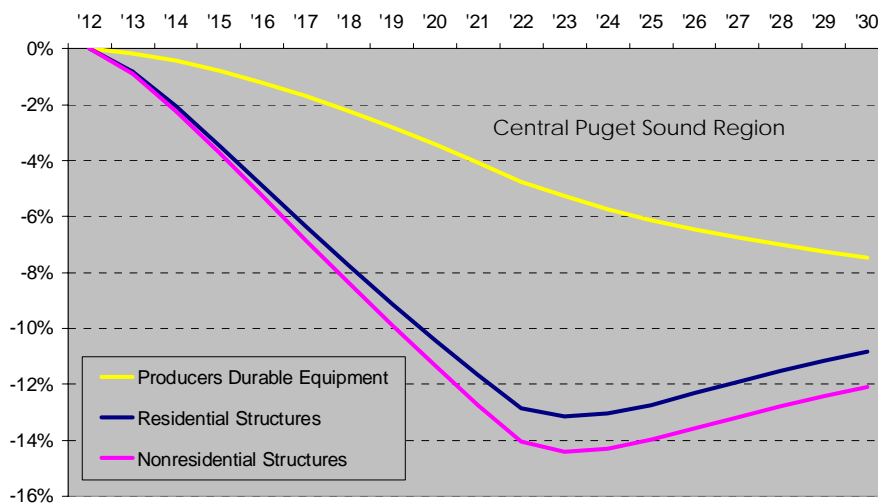
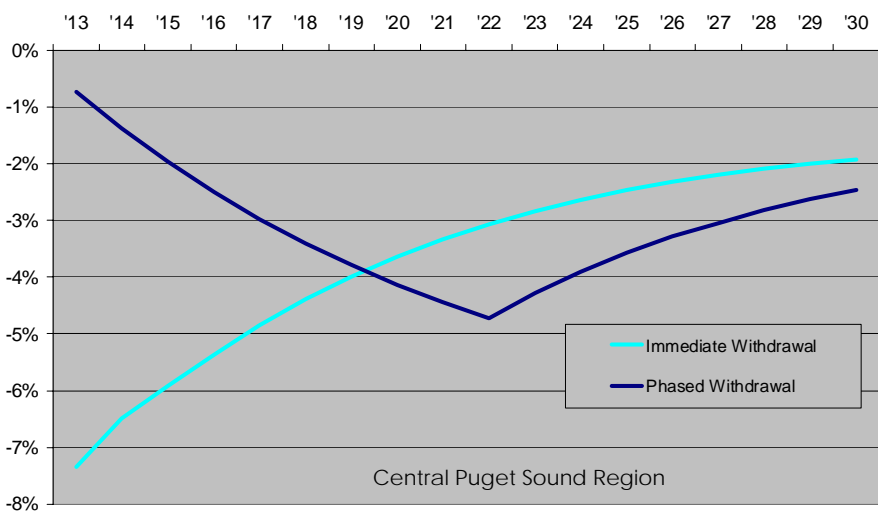


Chart 13: Real Per Capita Personal Income (vs. baseline)



2013, there are only 1,400 fewer construction jobs than in the baseline. That decrement grows to 22,200 by 2023, and is 19,600 in 2030.

With phased withdrawal, the impact on real per capita real personal income builds more slowly than with immediate withdrawal. In part this is because unemployment is not as high in the early years. However, for the years 2018 to 2030, the phased withdrawal unemployment rate is higher than the immediate withdrawal unemployment rate. In part this is because the average rate of compensation for individuals with jobs does not fall as rapidly because high paying Boeing jobs did not all go away at once.

### **CONCLUDING COMMENTS**

As the recession lingers, state policymakers have expressed recurring concerns about “economic stimulus” and “laying the foundation” for post-recession recovery. In that equation, nothing can take precedence over the old shopkeeper’s maxim: The key to success is retaining good customers.

Our state’s economic recovery depends on our ability to retain our premier industries. As this report demonstrates, The Boeing Company plays an extraordinary role in the Washington economy. Its contributions are irreplaceable. Nothing on the horizon promises the positive economic impact of a retained aerospace cluster.

Location is a choice. Our policymakers must act now to assure that Washington is the right choice for our major employers.

### **REFERENCES**

Pascall, Glenn, Douglas H. Pedersen and Richard S. Conway, Jr. (1989). The Boeing Company Economic Impact Study. Prepared for The Boeing Company. September.